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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/560,132

12/09/2005

Kazutaka Nara

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05/20/2008

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

WONG, TINA MEI SENG

ART UNIT

PAPER NUMBER

2874

NOTIFICATION DATE

DELIVERY MODE

05/20/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/560,132	Applicant(s) NARA ET AL.	
	Examiner Tina M. Wong	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-16, 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 17-20 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
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| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office action is responsive to Applicant's response submitted 27 March 2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2002/0181857 to Komatsu et al.

In regard to claim 17, Komatsu et al teaches an optical splitter with an optical signal multiplexing and demultiplexing function comprising:

an optical waveguide circuit formed on a substrate, wherein the optical waveguide circuit comprises:

an optical splitter for splitting an optical signal input from a light input port provided at one end of the optical waveguide circuit into a plurality of optical signals having the same intensity and for outputting them from a plurality of light output ports; and

a plurality of optical signal multiplexing and demultiplexing devices arranged in parallel to each other, each being provided with two light input ports and having a function of multiplexing optical signals having different wavelengths input from the light input ports,

wherein one input port of each of the optical signal multiplexing and demultiplexing devices is connected to the corresponding light output port of the optical splitter,

the other light input port of each of the optical signal multiplexing and demultiplexing devices is provided at one end side of the optical waveguide circuit to be parallel to the light input port of the optical splitter, and

a multiplexed optical signal output port of each of the optical signal multiplexing and demultiplexing devices is provided at an end portion side other than a region where the light input port of the optical waveguide circuit is provided.

Although Komatsu et al teaches does not specifically describe the first interferometer as an optical splitter, the interferometer taught by Komatsu et al does teach the splitting of an optical signal into each of the respective output waveguides. Therefore, Komatsu et al does teach an interferometer capable of performing the functions of an optical splitter.

In regard to claim 18, Komatsu et al teaches a first optical waveguide and a second optical waveguide provided in parallel to the first optical waveguide with a gap therebetween,

wherein two Mach-Zehnder optical interferometer circuits, each having directional couplers formed by arranging the first and the second optical waveguides closely to each other with a gap in a lengthwise direction of the optical waveguides therebetween, are connected in series to each other to form an optical signal multiplexing and demultiplexing device,

an arrangement pitch between the directional couplers in one Mach-Zehnder optical interferometer circuit is equal to that in the other Mach-Zehnder optical interferometer circuit,

a length of a phase part of the first optical waveguide is larger than that of the second optical waveguide by a set length, in the one Mach-Zehnder optical interferometer circuit, and

a length of a phase part of the second optical waveguide is larger than that of the first optical waveguide by the set length, in the other Mach-Zehnder optical interferometer circuit.

In regards to claims 19, 20 and 23, although Komatsu et al does not specifically teach a coupling efficiency of one directional coupler in the Mach-Zehnder optical interferometer circuit is K , a differential coefficient $dK/d\lambda$ of the coupling efficiency K with respect to a wavelength of $1.55 \mu\text{m}$ is negative, and the coupling efficiency K is about 100% at a wavelength of 1.31 or 1.49 or $1.55 \mu\text{m}$, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have specified the claimed wavelength and coupling efficiency values since a center wavelength about 1.31, 1.49 and $1.55 \mu\text{m}$ are known in the art, as well as maintaining the highest percentage coupling efficiency in order maintain a strong signal.

Allowable Subject Matter

Claims 1-16, 21 and 22 are allowed. The prior art of record fails to disclose or reasonably suggest a broadband wavelength multiplexing/demultiplexing filter including a point-symmetrical connection of interferometer circuits connected in series in addition to the accompanying features of the independent claim. The closest prior art were discussed in the previous Office action. Also, see Remarks/Arguments received 27 March 2008, page 2.

Response to Arguments

Applicant's arguments filed 27 March 2008 in regards to claims 17-20 and 23 have been fully considered but they are not persuasive. Applicant argues Komatsu et al fails to teach multiplexing a plurality of different wavelengths input from the input source. Applicant further states for Komatsu et al to teach the center optical wavelength to be substantially identical. Although the Examiner does not disagree Komatsu et al teaches the purpose of the device is for the center optical wavelength to be substantially identical, Komatsu et al also states many different wavelengths are inputted from the input portion. [0070] Furthermore, although the

center wavelength may be desired to be identical, this does not preclude other different wavelengths from being inputted from the input source.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tina M. Wong whose telephone number is (571) 272-2352. The examiner can normally be reached on Monday-Friday 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tina M Wong/
Primary Examiner, Art Unit 2874